LH7A404-11
Card Engine

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LogicLoader User's Manual Addendum www.logicpd.com

REVISION HISTORY

REV	EDITOR	REVISION DESCRIPTION	LogicLoader Version	APPROVAL	DATE
A	Bruce Rovner	Release		B.R.	07/24/03
B	James Wicks	Figure 1.1 Revision		B.R.	10/17/03
C	Chris Rempel, Bruce Rovner	Updated for LogicLoader Version 1.4 Release	1.4	B.R.	03/31/04
D	Aaron Stewart	Added Supported Options in LogicLoader	1.4.4	ME	02/09/05
E	Bruce Rovner	Update for LogicLoader 2.0.3 release. Updated section 1 diagrams for exec and execution format. Updated supported options table for hardware support description.	2.0.3	HAR	08/04/05
F	Jed Anderson	Corrected Serial EEPROM details in Section 2.1 to read "bytes" instead of "bits; Added 3.6" Display info to Section 2.1; General grammatical and formatting changes.	2.3.3	JCA	06/26/07

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1 LH7A404-11 Memory Map Diagrams

1.1 SDRAM Configuration

The LH7A404-11 Card Engine is designed to accommodate SDRAM of different sizes. Under LogicLoader's default configuration, all memory installed is accessible. However, on 64 MB Card Engines the SROMLL bit is set to make two separate 32 MB physical chunks. The MMU is then configured to make the two 32 MB chunks appear as a single 64 MB virtual chunk.

For further documentation:

- Refer to the *Sharp LH7A404 User Guide* for more information on the SDRAM controller,
- Refer to the *ARM 922T Technical Reference Manual* for more information on the MMU.

1.2 MMU Remap: Physical Memory to Logical Memory

LogicLoader sets-up the MMU to remap physical memory to logical memory. Type **`info cpu`** at the losh> prompt to see how LogicLoader remaps physical memory to logical memory. If you need to address a device outside of the default address map, use the 'remap' command to make additional address space accessible from within LogicLoader.

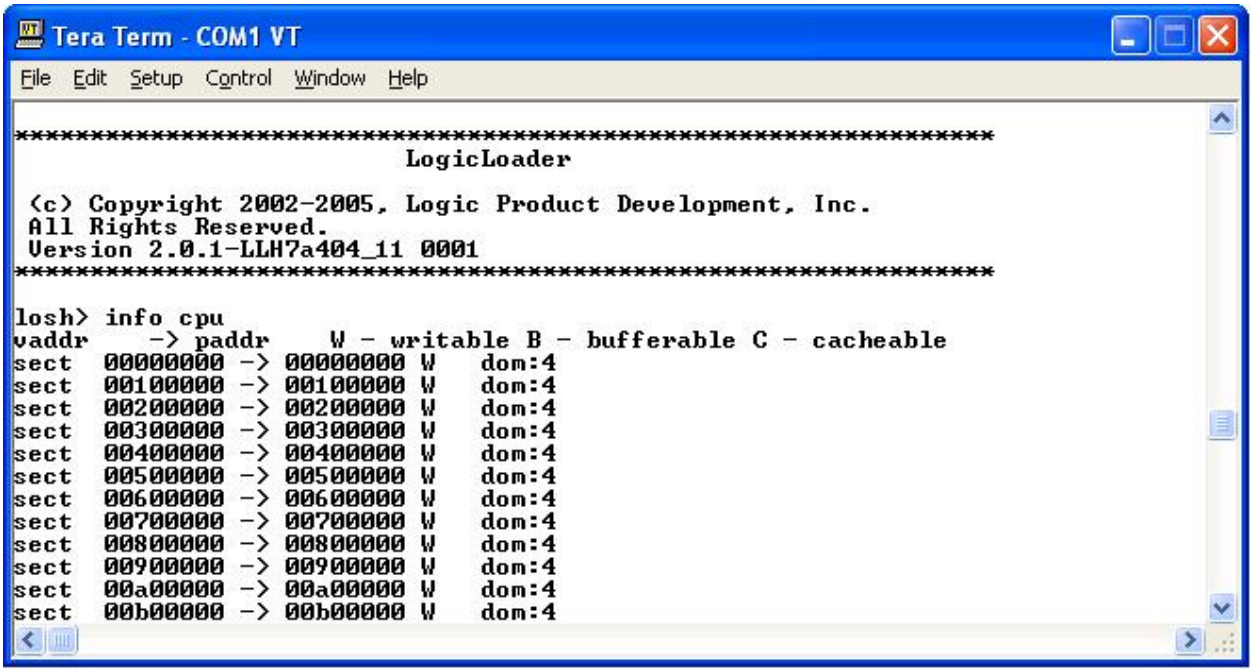

Figure 1.1: Type `info cpu` to see the MMU remap

Note: The figure you see may differ from those presented in this example.

1.3 Physical Hardware Memory Map

Note: Memory regions may require the use of the ‘remap’ command to be accessible.

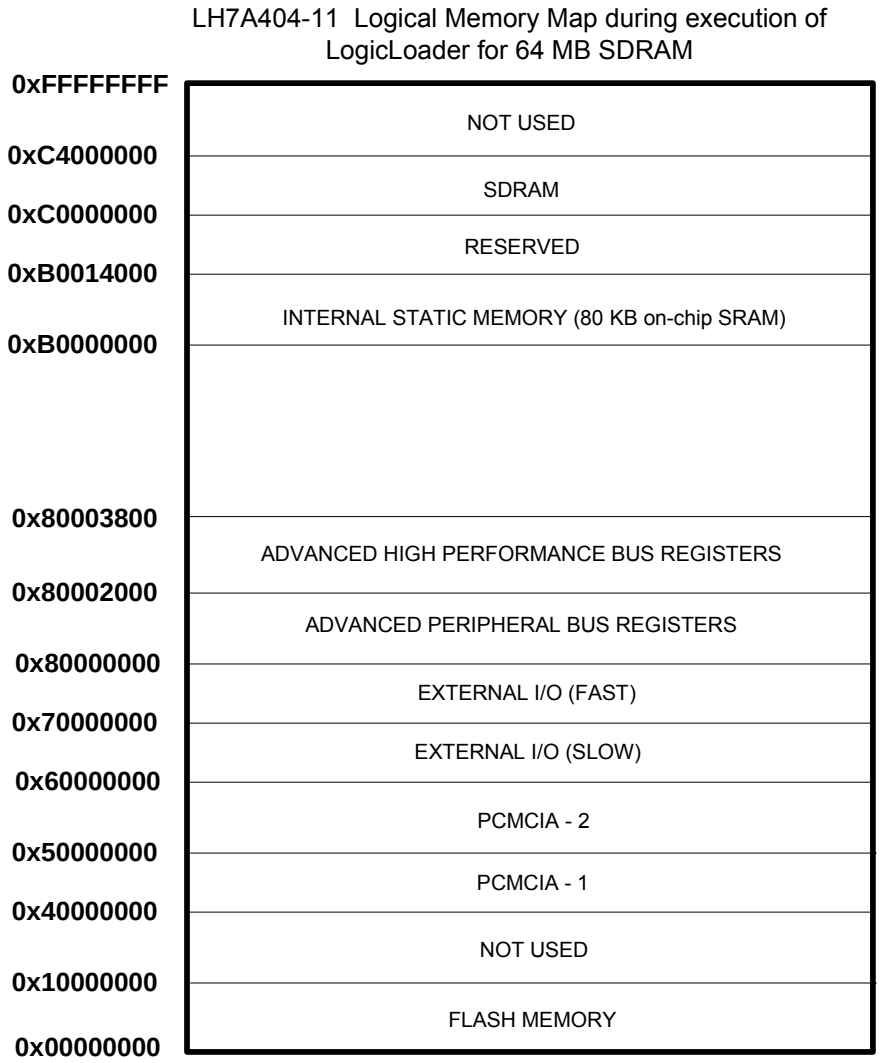

Figure 1.2: LH7A404-11 Hardware Memory Map

1.4 LogicLoader and the Configuration Block in Flash Memory

LogicLoader is programmed into the Card Engine's resident flash array. The optional Configuration Block may be added with the 'config CREATE' command.

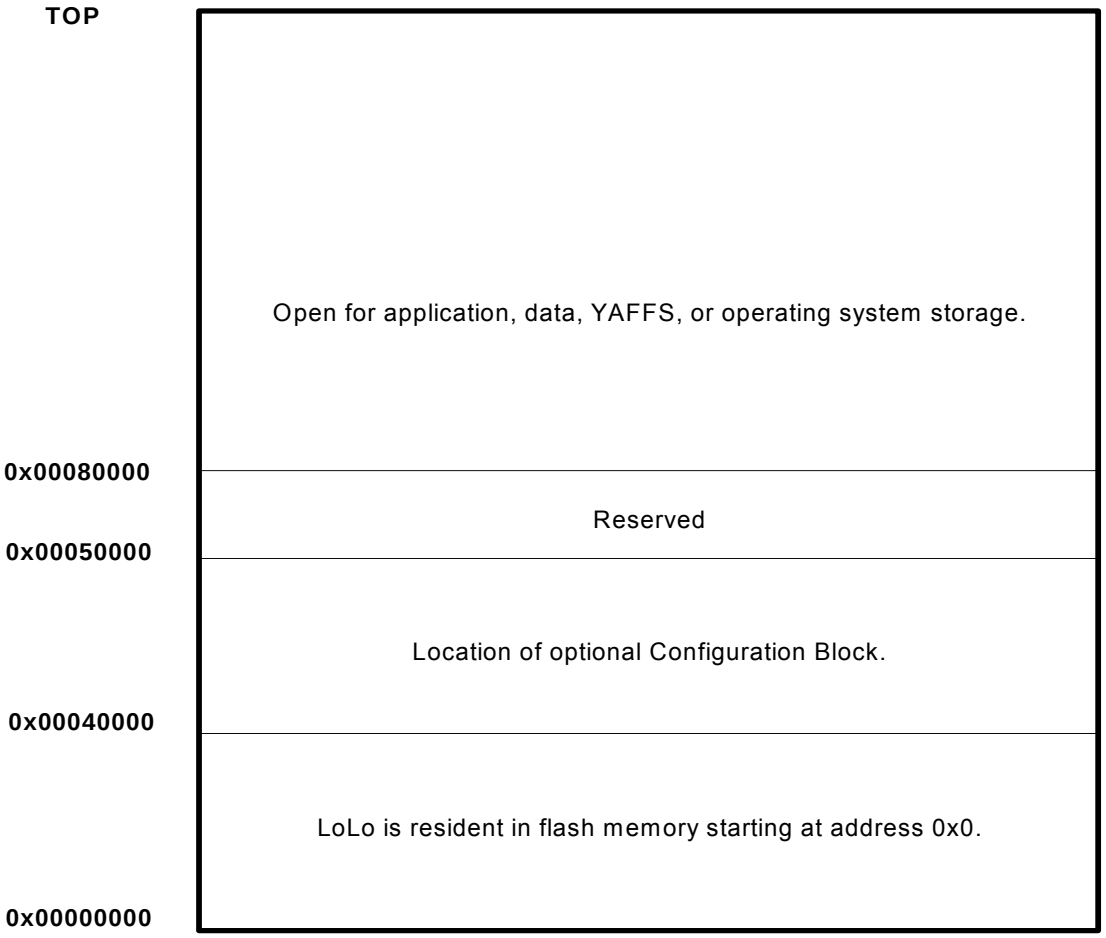

Figure 1.3: Flash Memory Layout

1.5 LogicLoader's Location in RAM

LogicLoader executes out of RAM. The diagram below depicts run time location of LogicLoader.

Run-time location of LogicLoader:

At reset, LogicLoader relocates itself from flash memory to system SDRAM. LogicLoader then spends the remainder of its run-time executing out of system SDRAM.

Note: the size of LogicLoader's code and variable sections are estimates. This size depends on the exact features built into the LogicLoader image and may change with new releases. The location of LogicLoader's stack is dynamically determined at run-time based on the size of the code and variable section. Therefore, the location of the stack is provided as an estimate in this diagram.

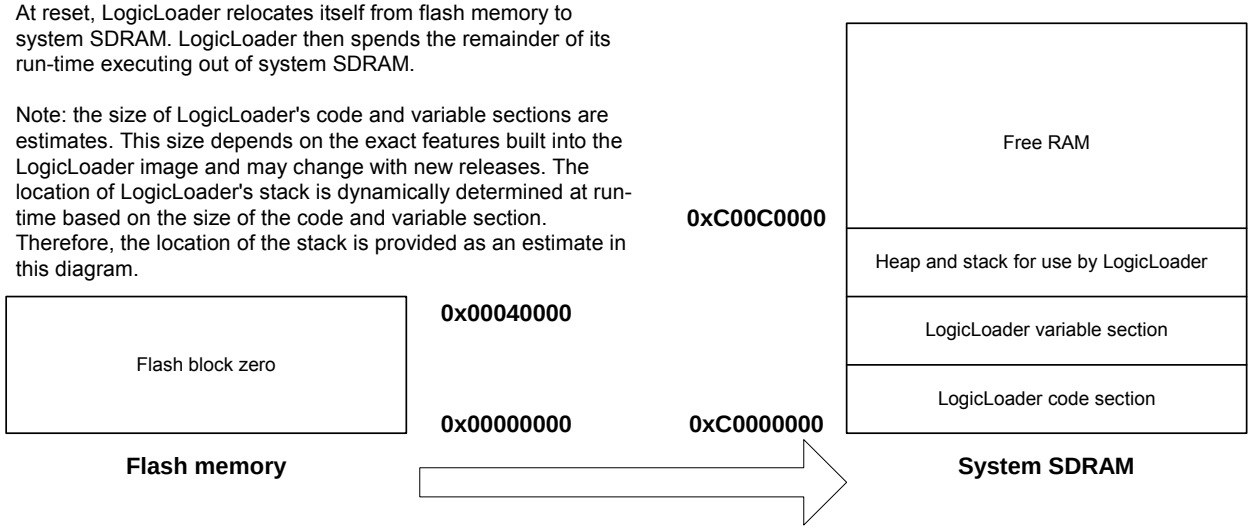

Figure 1.4: ***LogicLoader RAM Execution Environment***

2 LH7A404-11 LogicLoader Functionality

2.1 Supported Hardware Peripherals

The table below lists LH7A404-11-specific peripherals supported by LogicLoader.

Hardware Peripheral	Support (Y/N)	Details
Audio	N	--
Display:	Y	LogicLoader supports 8 and 16 bits per pixel; custom displays can be supported by using the config block
LCD-3.5-QVGA-10	Y	Display kit with LCD part number LQ035Q7DB02
LCD-3.5-QVGA-20	Y	Display kit with LCD part number LQ035Q7DB02
LCD-3.6-QVGA-10R	Y	Display kit with LCD part number LQ036Q1DA01
LCD-5.7-QVGA-10	Y	Display kit with LCD part number LQ057Q3DC02
LCD-6.4-VGA-10R	Y	Display kit with LCD part number LQ64D343
LCD-10.4-VGA-10	Y	Display kit with LCD part number LQ10D368
LCD-12.1-SVGA-10	Y	Display kit with LCD part number LQ121S1DG31
Ethernet	Y	10/100 MBit support; MAC address stored in dedicated serial EEPROM; static IP address can be supported by using the config block
Flash Memory	Y	NOR flash only
IrDA	N	--
Memory Card Expansion:	Y	CompactFlash memory cards are supported only. 16 -> 256 MB CompactFlash memory cards have been verified.
IO Mode PCMCIA/ CF	N	--
Memory Mode CF	Y	Recommended: SanDisk, Toshiba, PNY
SD/MMC	N	--
Smart Card	N	--
Processor:		
Cache	Y	Copy-back mode
Clock	Y	200 MHz CPU / 100 MHz Bus
Power Management	N	--
MMU	Y	Use ‘remap’ command to access unmapped regions of memory
PS/2	N	--
RTC	N	--
SDRAM	Y	32 or 64 MB; CAS-2, auto sizing
SSP	N	--
Serial Port:		
UARTA	Y	115200 baud standard, RTS flow only; 2400 to 460800 baud can be supported by using the config block
UARTB	N	--
UARTC	N	--
Touch Screen	N	--
USB Host	N	--
USB Function	N	--
Misc:		
GPIO	Y	Use ‘w’ and ‘x’ commands to access data direction and data registers to control GPIO lines per register description in processor and IO Controller specification documents.
Status	Y	Toggles to show system “heartbeat”

Hardware Peripheral	Support (Y/N)	Details
Mode Line 2	Y	QuickBoot Feature details: LogicLoader will typically pause 500 mS to look for the ‘q’ key on UARTA. However, if the Mode Line 2 (uP_MODE2) is grounded, this 500 mS timeout is skipped and the boot script runs immediately.
Serial EEPROM	Y	128 bytes

3 Disclaimer

Logic strives to provide the most up-to-date information. However, the list of supported features in this document is partial and subject to change.

The “Supported Hardware Peripherals” list was created to describe the supported features for fully populated standard card engine builds. If the Card Engine in use is a custom build or has some hardware feature omitted, the commands related to those hardware features may not function.

If you need software support on demand, please contact Logic Product Development sales at: product.sales@logicpd.com.

